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Multiple Use Survey Report of the FRENCH BROAD RIVER (PL-566 Project) PISGAH National Forest North Carolina

U. S. DEPARTMENT OF AGRICULTURE FOREST SERVICE
Southern Region May 1965 R-12 R-8

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GAT

French Broad PL-566

Rewrite of report.

Site by site items

1. What there was
2. Potential - Need - capacity
3. To fill the need.
3. What with the project

Responsibility for replacement roads.

Present conditions Catch

Stream stability. restoration 70 %

Fish habitat - 10 %

Potential ~~stability~~ ~~90 %~~

Stream 90. %

Fish 75 %

Travel routes after relocation

Public lands only area are for future use.

Destroyed fish habitat potential

Recreation. Keep area. (1-20 1-40 Parkway)

Quality classification by kind

Hydrological condition including drainage
TVA 1961 storm report.
Elk River.

Maps.
4 site photos
1/2" map.
F.S. ownership
Sites Boxes.
Rec. sites (camp grounds picnic)
Roads class.
Trout Streams (water)

Composite table of Rec. sites.
" " " Trout water
NF above Private above
NF below " below.
Composite Table Roads

[redacted] FILE COPY

R-8

DAT-your c

3570 (French Broad)
2510

Donald A. Williams, Administrator
Soil Conservation Service

Edward P. Cliff, Chief
CWP (Dr 526 —
Surveys (Impact - French Broad Project)

November 6, 1964

The purpose of this memorandum is to outline the results of our November 4 conference concerning a course of action with regard to the French Broad flood control project. We will be happy to consider a project proposal which can be fitted into the multiple use program of the National Forest.

During our meeting several essential requirements of project design and installation were reviewed which you felt could be fully accommodated by a redesign of project works. These were:

1. All structures will provide for the adequate passage of fish up and down stream channels, during all levels of streamflow, to avoid damage to the trout fishery.

2. Devices would be installed to handle water discharged from the reservoirs in a manner which would prevent erosion of all channel reaches in which structures will be installed.

3. Provision will be made to replace transportation facilities to be disrupted by the project works so that access to National Forest lands will provide the same level of service as exists immediately prior to project construction. Replacement of these facilities will precede other phases of project construction to insure uninterrupted access for fire control, administration, and resource use.

4. The external design of structures and the selection and treatment of borrow areas, the post construction treatment of road fills and cuts and other soil disturbing operations will be designed and treated to prevent discharge of sediment into streams during and following the construction period, shaped to blend into the topography and revegetated to achieve both esthetic and soil stabilization objectives. Obviously we can't afford the situation which reportedly occurred during construction of the Jones Creek structure in the Etowah subwatershed.

5. A reanalysis of all structure sites and their contribution to downstream flood protection will be jointly made to determine the contribution of individual reservoirs to the total flood control needs of the French Broad drainage. Particular attention will be given to the possibility of substituting sites not included in the present tentative proposal for some of those currently occupying key National Forest recreation sites.

2c. N.C. NF
C-Eng S+PF
T.M. WF
R+L CAT
File
Exec

KHW
gr
D

It is my understanding that Soil Conservation Service will take the lead in design of the structures required to achieve the objectives of points 1 and 2 above. I wish to be personally satisfied that the important fishery values of these streams will be completely protected.

With regard to points 3 and 4, our people will work with you as necessary to come up with specifications and design criteria to achieve the objectives sought.

With regard to point 5, please let us know when the recently acquired hydrologic data has been processed and you are ready for us to participate in the re-analysis.

At our meeting I told you I would let you know who in the Forest Service would be responsible for follow-through in trying to work out a feasible project in the French Broad. The issues involved in the French Broad are primarily concerned with National Forest multiple use management. Our Division of National Forest Watershed Management is responsible for the preparation of surveys, reports, and associated staff work related to projects of this type as they concern the National Forests. This Division is equipped with technical capability in the field of water resource management. For these reasons I am asking Byron Beattie to assume responsibility for working with your office in developing a revised work plan for the French Broad. In so doing I want to make it clear that this does not change our overall arrangement for liaison between our two agencies which in the Forest Service rests with Deputy Chief Rasmussen and Division Director Murphy.

Our participation in the updated work plan will involve members of this office and of our field organization. We are prepared to give priority attention to this project and sincerely hope that one can be developed which achieves our mutual objectives.

One further point. We both agreed that groups other than the project sponsors should be given an opportunity to comment on the project proposal. I would hope therefore that a revised work plan would be strictly an internal affair until it has reached the stage where it is suitable for review by all interested groups.

I am attaching a suggested draft of a followup letter to Congressman Taylor. I would appreciate a Forest Service review of the final draft you prepare.

EDWARD P. CLIFF

Enclosures

CC: Mr. Murphy
Region 8

WWRM FILE COPY

356

3570 (French Broad)

Chief, Forest Service

~~1540(1000)~~

J. K. Vessey, Regional Forester
CIPP(PL-566)
~~Intradepartmental SCS~~)

November 16, 1964

Dear Ed:

You did a fine job in conducting the meeting with the SCS folks on November 4. I thought you did a masterful job in bringing out the pertinent factors in this unpleasant situation. Particularly do I appreciate the strong position you have taken. I congratulate you on the skill you displayed in getting this vital project back into the planning stage. I'm sure that much good will come from the further study that will be applied to the French Broad Project.

We now recognize many errors and omissions, particularly in connection with communication and coordination - both within and outside our own organization - that just should not have happened. I regret that I did not give the project more personal attention prior to the submission of the SCS Report. However, the stand you have taken and the re-study action you have instigated will insure future benefits. Certainly all of us in the Southern Region will be alert in handling 566 projects on the National Forests in the future. I'm sure, too, that SCS, in the future, will not take the use and occupancy of National Forest land for granted.

I hope that you and your staff will give further consideration to the importance of the loss of prime recreation sites in connection with the French Broad dams. Now I'm sure that we took entirely the wrong approach in presenting the recreation use values that would be destroyed by the 566 dams as proposed in the SCS Report. We should not have mentioned the 111 acres of recreation development sites that would be lost. We should have emphasized the more than 300 family units that would be eliminated, stressing that this involved the loss of 165,000 recreation visits and more than a million dollars of economic potential to the local community. We should have stressed the fact that the elimination of these recreation development sites will eliminate any possibility of our disbursing recreation use over the considerable number of acres involved in the several watersheds affected.

Actually, recreation development sites that can handle an appreciable number of recreation visits is scarce to non-existent in those watersheds concerned. I should have placed more emphasis on the fact that the economic loss of the more than one million dollars involved in the recreation visits is one-fourth more than the value figure attributed to the dams in the development of the SCS cost benefit ratio. It's no more realistic to say that this recreation use would be forthcoming elsewhere in the area than it would be to say that farming on the farmland to be protected could be conducted elsewhere. I believe we will make a mistake if we do not stress the loss involved in the elimination of recreation development in

this section of the Pisgah Ranger District.

There are many facets of this situation which did not come out in our meeting with the SCS or in our pre-meeting briefing with you. For that reason, I would like to have Glenn Thompson make a trip to your office to spend at least a day with Beattie early in the deliberations which he will head up. Glenn has spent a lot of time on the ground in connection with studying the French Broad situation as well as the Jones Creek dry dam in North Georgia. Also, Glenn remembers as I did that their own man, Graham, at the meeting of the sponsors in Brevard, publicly admitted that they had eliminated one potential dam site because it would flood some good farmland and another dam site that would have eliminated the possibility of developing a golf course. At the meeting with you and the SCS folks, I indicated that that information came to me as hearsay, but the hearsay was publicly admitted by their own man who worked on the project.

I'm chagrined and I humbly apologize for allowing the French Broad situation to develop to the point where you must get into the picture. However, I'm sure that what transpires will establish a new benchmark in regard to our future relations with SCS in connection with the 566 program. It's overdue.

Please let me know when it will be convenient for Byron Beattie to get together with Glenn Thompson at your office.

2550

Forest Supervisor, NFs in North Carolina — November 15, 1965

J. K. Vessey, Regional Forester

Cooperation (Upper French Broad, TAD - TVA)

ADMINISTRATIVELY CONFIDENTIAL

Thanks for transmitting Mothersin's comments on TVA's water development meeting in Asheville, October 13.

Attached is a copy of Shenkyr's comments on the meeting.

Yes, there is considerable that should be done in measuring, assembling existing data, appraising plans, specifications and priority, and getting with the sponsors and even the public on certain items. We suggest you prepare (at the earliest possible date) a plan of work or a program incorporating all actions that need to be taken, by whom and when. This program would be directed primarily at the issues involved on the Davidson River Dam.

Our approach in handling the North Fork and, possibly, West Fork Dams should be similar to our report on the PL-566 structures in like areas; that is, a site-by-site analysis, appraisal and report recommendations developed as soon as the specifications for the structures are available from TVA. In the meantime, we should get with their planning people and make known our requirements for road replacements, dry dam specifications and so forth, as may be determined.

The Davidson River Dam is a very special problem. You should act with full realization that it is not likely that the TVA plan will be accepted by the sponsors or public without the inclusion of this ideal, natural reservoir and dam site. Also a strong motivating item is the contribution of public land in at least 1 or 2 of the 11 structures in the Upper French Broad Water Development Plan. We know that we do not have sufficient hydrological data to refute the need for this dam. The barometer watershed measurements will help develop such data. The avoidance of any use or development detrimental to the watershed functioning is critically important.

Therefore, our very minimum objective is to establish low priority need for the construction of this dam, both in the plan and the construction schedule later, during which time we should know more of the flow characteristics of this drainage and have a sound plan for future watershed management.

At our last November investigation of flow sites with TVA officials, we established the very definite need for channelization of the lower French Broad River from at least Brevard to Rent Creek. We need to emphasize the priority of this, both to the sponsor and public, with the companion question as to whether the Davidson River flow contributes materially to the flooding, particularly after such release is provided. A five-year study would be the minimum to insist upon, after the channelization is done, prior to yielding to the construction of the Davidson River dam.

The plan of work or program for the Davidson River dam must include the contribution the barometer watershed will make in meeting the flood control objectives. Adequate publicity should be given to the barometer watershed for local public understanding. Make them conscious of the role of forests in hydrology, maybe go so far as to publish the Davidson River hydrographs against other drainages in less favorable condition. The hydrological surveys that we must soon do within the boundaries of this watershed should be given similar publicity. Use terms in feet per second, per square mile for flow and yield, the reservoir capacity of these deep absorbent soils in acre feet of water, the accelerated flows that roads and similar land occupancy contribute to peak storm runoff. Use the geology and condition of the French Broad valley. Get people to understand that the gradient of the French Broad River from Rosman to Rent Creek is less than 2 feet per mile, while from Rent Creek to Tennessee it is 40 feet per mile. Enlighten key people on the contribution the debris-laden river channel in the valley is making to flood damage.

In speaking of restricted channels, we need to carefully appraise the very definite restrictions in the Davidson River channel from the highway through the Pisgah Forest community. Most flooding of the residential section of this town definitely arises from a restricted channel, particularly that portion by-passing the industrial plant.

Such a plan or program of approach is time-consuming and tests our capabilities for such analysis and implementations as the other issue does. You have some of the data needed. Much more to a higher degree of intensity is needed.

We will expect you to take the initiative in this effort. Attached is such a plan for the Lake Cumbaita project which may serve you as a general guide.

Attachments

cc: W. C. (Seattle)
Eng.
R&L
Fire
I&E
D
WL&R
Exec.

GAThompson:ef

January 6, 1964

IMPACT APPRAISAL OF FRENCH BROAD PL-566 WATERSHED WORK PLAN ON PISGAH NATIONAL FOREST

To properly appraise the impacts of the Upper French Broad PL 566 Plan of Work, we need first to agree on certain controlling assumptions.

The first and foremost of these concerns the role of government to achieve full potential of all resources, physical and human.

The achievement of this major objective requires that certain basic items founded on previous experience supply direction and coordination. These take into consideration trends in human use, population trends, private enterprise investments, and various other expressions of the people's needs and desires. Largely, these are economic and are thus appraised, but many, particularly of a national interest, are intangibles. This latter particularly applies to the multiple use management of the National Forests as the authorizing law requires consideration be given to the relative values of the various resources and not necessarily the combination of uses that will give the greatest dollar return.

In any event, the true basic consideration is the condition and potential of the resources involved.

The implementation of the items concerned in the above assumptions is envisioned in Senate Document No. 97. Its full application awaits Congressional action on the revised Water Resources Planning Act in S-1111. This will establish a policy of Congress that conservation development and utilization of the water and related land resources shall be planned on a comprehensive and coordinated basis with the cooperation of all affected Federal agencies, States, local governments and others concerned.

Because of the many resources contained on the National Forest lands, their administration has long followed the concept of management now legally termed multiple use and sustained yield. To carry out this concept, priority is given to the 5 basic renewable surface resources, soil and water, timber, forage, wildlife--including fish habitat--and outdoor recreation. The first 4 are products of nature's processes. Any lasting alterations are best obtained by using methods or practices in harmony with nature. Only when conditions require treatment yielding more ready results should artificial measures be considered.

The accomplishment of the objectives contained in multiple use guides and plans requires constant subjection to inspection and revision. This continuity of effort encourages modification of approaches to different circumstances and uses the most recent advances in knowledge to best meet the needs of the American people.

Multiple use planning of necessity demands full consideration of long-term effects of any management decision or action program. Our investigations lead us to feel that the installation of the planned system of flood control structures in geographically key sites on these high quality mountain streams will seriously inhibit the full integrated development of the resources, by--

--detracting measurably from the over-all aesthetic qualities of the most heavily visited Ranger District in Eastern United States.

--inundating the most feasible sites for expanding public recreation facilities.

--destroying, or seriously damaging, trout habitat in mountain streams representing nearly 5 percent of the total mileage of such waters in North Carolina.

--activating or reactivating erosion in stream channels already in satisfactory condition or improving.

--complicating the development and maintenance of an adequate transportation system for progressive tourist travel, for orderly dispersal of recreationists, including hunters and fishermen, and for efficient movement of timber and other products.

These and other effects are so serious and so far reaching, we conclude that planned structures directly or indirectly affecting the National Forests are not compatible with management of these public lands under the principles set forth in the 1960 Multiple Use Act.

Recreation (Pisgah Ranger District)

Objective - Facilitate access to outdoors by developing sites with simple improvements necessary to provide domestic water, sanitation, and protection of flora, fauna, and unique geological features.

Sites and Facilities

3 Campgrounds

9 Picnic sites

1 Organization site

1 Resort

1 Commercial public service site

1 Summer home site

4 Swimming sites

20 TOTAL DEVELOPED SITES

127 TOTAL DEVELOPED ACRES

Plus Blue Ridge Parkway, Appalachian Trail, and 11,605 acres of scenic zones.

8 Scenic areas being studied for protection containing 868 acres. Shining Rock wild area dedication pending; 13,400 acres protected for scenic values.

358 miles of trout stream containing 405 acres.

125 miles in French Broad Watershed, 141 acres, approximately 1/3 affected.

Pisgah Ranger District Use in CY 1962

	Man-Days
Camping	330,000
Picnicking	187,000
Org. Camps	28,500
Resorts	30,000
Misc. Other	437,000*
TOTAL	1,013,500

Camping is fastest growing demand. Large numbers turned away from improved areas.

*Included here 17,500 man-days fishing, 15,000 man-days hunting.

Based on national averages, the economic value of the fishing was $100,975. The proposed project could ultimately cause a loss of 1/3 or $33,658 annually from loss of trout fishing alone.

Wildlife (Pisgah Ranger District)

Objectives - Develop maximum habitat for game through silvicultural methods and for trout by retaining, developing, and stabilizing all possible mountain streams and providing access thereto.

Data - 15,500 hunter days

17,600 fisherman days

All streams are trout waters.

358 miles - Rainbow, Brown, Brook

125 miles (230 acres) on NF land in project area

4½ trout per man-day

33 to 67 percent from native reproduction

(This use on basis of part time availability. Saturation problem on days open.)

Specifications for trout stream quality.

1. Protect streamside areas from any use causing sedimentation.
2. Keep free of debris.
3. Stable channel (bed and banks).
4. Effective filter strips (sediment traps).
5. Limited occupancy.
6. High and low shade (favorable temperatures).
7. Unrestricted seasonal migration (spawning sites).

95% of trout waters in Transylvania County are included in project area.

Transylvania County trout license sales are 4th highest in state.

Forest Service System Roads

Affected by Eight Structures

Structure Site No.	Name of Stream	F. S. Road No.	Miles of Relocation	Replacement Costs
3	West Fork	243 3/	2.0	$200,000
		244	0.5	50,000
7	Tucker Creek	246-1	1.4	126,000
9	North Fork	32 1/	1.8	315,000
24	Catheys Creek	471-2 2/	4.0	320,000
26	Kings Creek	487-1	2.0	200,000
27	Lambs Creek	253-1	1.1	88,000
28	Turkey Creek	252-1	1.0	72,000
35	Shoal Creek	247	0.8	72,000
		Total	14.6	$1,443,000

1/ Forest Highway

2/ Forest Development

3/ School bus route

AREA HISTORY

Settlement

1540 - Spanish explorers.

1690 - Traders from coast.

1752 - First settlers.

1773 - About 25,000 people in western Carolina mountains.

1835 to 1860 - Area of progress.

Since 1930 population in 16 of 23 mountain counties has decreased.

Use

Cultivation began with first settlers.

1860 - All tillable land was farmed.

1890 - Heavy commercial timber cutting began.

1928 - End of cutting virgin forests.

1925 - Last major forest fire (the greater part of Upper French Broad River drainage was burned intensively).

1916 - U. S. Forest Service acquired first land for National Forest purposes.

Storms - Peak stages and discharges. French Broad River - Rosman

Year	Month	Gage Height	Discharge Cfs	Rainfall
1916	July	13.9	18,200	
1940	Aug.	11.8	9,410	
1949	June	9.5	4,080	
1961	Aug.	8.7	3,260	Aug. 1-23 - 14" Aug.24-25 - 10"

U. S. Geological Survey records show trend of higher water but less discharge, as at Blantyre the river was 1.45 feet higher in 1961 than in 1949 storms but less discharge. This is credited to "----increased vegetation growth on the basis and appreciable filling that has occurred in the channel."

Crop damage rates (sample) 1961 net loss per acre

Pasture	$10
Corn	80
Beans-pole	685
Tobacco	1,000
Gladioli (flowers)	1,500

WATERSHED WORK PLAN SUMMARY DATA

Location

Transylvania and Henderson Counties, North Carolina
Headwaters of French Broad River

Area 217,190 acres

Woodland	Acres	Percent
Private	97,485	49.4
USFS	83,060	34.0
NPS	500	.4
	181,045	83.8

(cover condition good)

Grassland - Hay - Pasture -	17,141 acres	7.9 %
Cropland	14,832 acres	6.8 %
Misc. Roads & Urban	4,082 acres	1.9 %

People

S & W Conservation Plans - 96 covering 11,965 acres

Farms - 1,090 average size 70 acres

Average value $207 per acre
Flood plain $500 per acre

Population	12,000
Rural agriculture	4,500
Non-agricultural	2,000
Urban	5,500

Truck crops and flowers major cash crops.
Considerable acreage to corn, silage, pasture and hay crops.

Sponsor Objectives

1. Installation of adequate land treatment measures and practices to minimize erosion losses.

2. Provide 5-year protection to 75% of the flood plain so located it can economically be protected by structural works of improvement.

3. Reduce to a minimum infertile deposition and flood plain scour to crop and pasture land.

Land treatment - Vegetative and engineering
Reduce erosion and runoff and improve soil structures

$1,023,587	Non-PL 566
288,513	PL 566
$1,312,100	Total

Structural - retarding, including

27,930 feet stream channel improvement
15,850 feet streambank protection
267,960 feet clearing and snagging channels
78 trout development measures
17 floodwater retarding structures

Costs -

$ 927,340	Non-PL 566 (value of land, easements, and
4,231,961	PL 566 right-of-way)
$5,159,301	Total

Eight-year installation period

First year, land treatment

Third project year, structures

Protection afforded 10,501 acres of the 14,192 in the flood plain

Average annual benefit - $786,975
Annual costs - 231,711

3.5 to 1.0 benefit - cost ratio

Flood water damages - extremely high.

.35 inches of runoff causes flooding in the lower areas.

Some flooding normally occurs 3 times per year with floods which inundate 75% or more of flood plain every 5 years and practically all the flood plain every 20 to 25 years. Sample Survey - 1,881 acres damaged by infertile deposition, as high as 25% of net annual value of undamaged acre.

Most severe damage along main stem of French Broad River and lower reaches of Little River.

1-8-67

Freeds Broad PL-566 FS Report

Preamble M.U. — key criteria obviously not
Guard against Dollar values.
Very large planning
~~Minimum~~ level projections.
Functional condition
optimum potential objective
& how to be done

1897-1911 — Watersheds — condition objectives
1960 — Wildlife — quality quantity regulated flow
Fish — Trout streams
N F land
Timber — More than commercial
Recreation — estimated sites - Key
Roads — costs rec.
Land use trends vicinity.

~~Maps~~ Structures
Index table - identifications
(10 dams)
Individual — ~~sites~~ situations
~~site 10 84+~~
~~Site 28 Turkey Cr~~

Statement of summary & conclusions.

Overlay:

Green - Waterfront zone
Tract water.
Dark green - Shoreside - road Primary zone scenic
Site 7. campground 200 visits

Legend. - map. & overlay.

Recent Losses

5 people per visit
$6.40 local expenditure

10-5-64

Byron

Damage French Broad.

T.V.A.

land exchange

Positive control land treatment.

COE -

Yes stage I & II

New Manual

Branch - River Basin?

Water as a resource mgt.

Hydrology

Impact

Mechanism for inspecting

N.F. lands adverse job

Roll of Forestry in floods

S&PF help guide their

Same as fire

10-1-64

Invite SCS

" Station help advice.

Pete phoned him

Photo's -

Observe - Key channels. Davidson Cottage. N Fork. & Tockee & school & Mills River.

Mark, measure Tag · points

Surface runoff.

Soil saturation - zones.

Time lapse relationship & damage.

collected Logging. areas recent. correct or

Private land conditions

Precipitation record

(3) Bill Hallstein.

(2) ~~Al~~

(1) Pete ~~Parry~~.

(3) John Courtenay impressed.

(2) Ivan Wells

(3) John Rich photo | Pete.

(1) Glenn ~~Hal Armstrong~~

(1) Ron Hilliard

(2) Don Pearson

Total coordinated plan

Flat French Broad TVA 5 county

FOREWORD

This is a report of the findings resulting from a study of the effects of the French Broad River P.L. 566 Watershed Project Plan of Work on lands in the Pisgah National Forest. Multiple use management of these lands requires consideration of resource values for timber, recreation, watershed and fish and wildlife. The project, as first proposed, had several detrimental impacts on National Forest resources, particularly the trout stream habitat. Negotiations with project proponents led to mitigation and resolution of these detrimental impacts.

Report recommendations stem from coordinated analyses by Forest Service technicians working in consultation with the project sponsors, with State and Federal agencies, and with other interested groups.

Recommended: _____
Forest Supervisor

5-4-65
Date

Approved: _____
Regional Forester

5/11/65
Date

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APPENDIX

I. GENERAL PROJECT DATA

a. Name - Upper French Broad River Watershed.

b. Planning Agency - Soil Conservation Service, United States Department of Agriculture as authorized under the Watershed Protection and Flood Prevention Act (Public Law 566, 83rd Congress; 68 Stat 666).

c. Sponsors - Transylvania County Soil and Water Conservation District, Henderson County Soil and Water Conservation District, and Transylvania County Watershed Improvement Commission.

Transylvania County successfully passed a referendum providing funding for the financial part of the plan of work. A similar referendum failed to provide for project financing in Henderson County.

d. Location - North Carolina, Counties of Transylvania and Henderson, Pisgah Ranger District, Pisgah National Forest.

e. Objectives -

1. Provide 5-year flood protection to 75% (10,501 acres) of the flood plain by use of structures (dams).

2. Install land treatment measures and practices to reduce runoff and erosion.

3. Reduce infertile deposition and flood plain scour.

Watershed work plan costs for land treatment measures are estimated to be $1,312,000 and will be financed from P.L. 566 funds. Seventeen floodwater retarding structures; 27,930 feet of stream channel improvements; 15, 850 feet of streambank protection; 267,960 feet of clearing and snagging of channels and 78 trout development measures are estimated to cost $4,231,961., and will be financed from P.L. 566 funds. The work plan estimated for land values, easements, and rights-of-way, which will be borne by the sponsors, is $927,340.00. The Work Plan estimates an average

annual benefit of $786,975., with annual costs of $223,711. for a 3.5:1 benefit-cost ratio.

The Work Plan has no provision for replacement of roads. Cost estimates for these road relocations are not included in the project costs.

The Work Plan states that the Transylvania County Watershed Improvement Commission will negotiate with the North Carolina State Highway Commission for the modification or relocation of public roads.

Table 1 identifies the 17 flood-water retarding structures.

TABLE I

Floodwater Retarding Structures
Total Project

Location	Site	Surface Sediment Pool	Area(Acres) Flood Pool
North Fork Flat Creek	1	17.5	34
West Fork French Broad River	3	24	212
* Tucker Creek	7	24	82
North Fork French Broad River	9	58	122
Little River	16	32	440
South Fork Flat Creek	20	21	55
Grassy Creek	22	24	107
Reasonover Creek	23	38	225
Catheys Creek	24	10	75.5
King Creek	26	4	23.5
Lamb Creek	27	4.5	20.5
Turkey Creek	28	6	36
Williamson Creek	29	31	69
Folly Creek	34	25	61
* Shoal Creek	35	12	48
East Fork French Broad River	37	38	193
Big Willow Creek	38	46	120

*These structures omitted from the revised work plan.

II. PRESENT STATUS OF AFFECTED AREA

a. Transportation Systems - The area is served by U.S. Highways 64 and 276 in addition to State Highways 191, 280, and 281. The Blue Ridge Parkway south of Asheville is under construction and it will be open for 1965 summer use. Interstate Highways 26 and 40, under construction, will pass adjacent to the area.

The Southern Railroad serves the area with a terminal at Asheville. A commercial airport at Asheville serves both commercial and private air traffic. Small private airports exist nearby.

b. Urban Developments - Asheville, with a population of 60,000, is located just north of the area. Brevard and Rosman, with a combined population of 5,500, are within the project area in Transylvania County.

c. Industrial Development - Principal industries in the area are Olin Industries at Pisgah Forest - employs 2700, manufactures cigarette paper and film (a supply of quality water attracted this industry). Dupont at Cedar Mountain - employs 350, manufactures photographic supplies. Mitchell-Bissell at Rosman - employs 60, manufactures textile supplies. American Thread Co. at Rosman- under construction, will employ around 200 to manufacture thread.

Asheville contains many large and varied industries, many of which are located in the flood plain of the French Broad River. The manufacture of wood products plays an important role in the economy of the area.

d. Farms and Ranches - The Valley of the French Broad River is very productive agricultural land. Corn and green vegetables are produced in large quantity. Dairying and beef cattle production provide major sources of income to many while the growing of cut flowers and flower bulb production contributes much to the area economy.

There are 1,090 farms within the project area averaging 70 acres in size. Periodic flood damage to farm crops is heavy. The Upper French Broad River Basin flood of August 24-25, 1961, caused crop damages amounting to $532,450 in Transylvania County and $344,800 in Henderson County.

Flood conditions are induced by the fact that the Upper French Broad flows

parallel to the Blue Ridge. Hurricanes and other storms spill heavy rainfall over this area. In 1964 Rosman recorded 129.94 inches. The September-October floods dropped 35 inches in 8 days. This was a record year.

e. Recreation Use and Numbers - The Pisgah Ranger District is one of the Districts with the largest recreation use in the Eastern United States. Recreation visits in 1964 totaled 1,408,000; equivalent to approximately 823,000 man-days use. These visits were for the purpose of:

Camping	20,000 Visits
Picnicking	250,000 Visits
Fishing	19,500 Visits
Hunting	21,400 Visits
Other	1, 097,100 Visits *
	1, 408,000 Visits

*Includes organization camps, hiking, driving for pleasure, etc.

This large visitation is attributable to the aesthetics of the Pisgah Ranger District. The cool summer climate, scenic forested mountains, and clear cold mountain streams appeal to the outdoor recreationist and sightseer. The natural beauty of the area is supplemented by developments to hold the visitor in the area. Developed recreation sites for picnicking and camping and interpretive developments such as the Cradle of Forestry Information Center help to attract increasing numbers of visitors to the area. The objective of recreation management is to maintain an aesthetic development in keeping with the mountain forest environment.

f. Soil and Water - Hydrologic conditions on National Forest lands are good and improving. However, poor land practices on private lands intermingled with National Forest lands create conditions resulting in accelerated rates of run-off and some stream sedimentation. Most of the National Forest land was acquired in 1916 and put under full protection and management. Previously, this land was subjected to practices which

were destructive to good soil and hydrologic conditions. The result of this earlier period of land abuse was heavy loads of sediment in all tributary chennels. Through the years, these sediment loads have, by successive stages, reached the main French Broad channel. This is amply illustrated by the obvious soil displacement from the upper watershed areas plus the fact that steamboats operated on the French Broad River from 1887, after an expenditure of $35,000 federal funds for channel clearance, until 1903 when shoaling from the sediment loads of the upper streams caused suspension of boating. Since then this shoaling has greatly increased. Measurements at the Blantyre Geological Survey station show a rise in the riverbed of 1.48 feet from 1949 to 1961.

g. National Forest Developments

1. Administrative Facilities - Buildings on the Pisgah Ranger District consist of 5 dwellings, 3 warehouses, and the related systems needed to service these structures. Three miles of Forest Service maintained telephone line runs from Pilot Mountain to the fire warden residence.

2. Trails - There are 75 miles of system trails on the District. Many miles of these trails are those constructed during the days of the Biltmore Field Forestry School. Many additional miles of non-system trails can be maintained for use as the demand develops.

3. Recreation Developments - There are 7 developed recreation areas inside the project boundaries. These areas have a total of 57 developed acres containing 144 family units and 9 recreation buildings. Parking lots on the developed areas have a capacity of 187 cars.
A detailed recreation use study of the 1964 use of the Davidson River section showed that present developed sites provide for about 209,000 annual visits. During 1964 the annual visitation at all of the development sites associated with the Davidson River complex was in excess of 600,000.

Much of the future visitation in this area will be visitors to the Cradle of Forestry in America.

h. Timber - There is an estimated stand volume of 67,795 MBF of sawtimber within the project area. Predominant species are yellow poplar, scarlet oak, and northern red oak. Other common species are chestnut oak, birch, hickory, red maple, and black oak. The estimated annual cut from this area is 1,600 MBF of sawtimber and 2,800 cords of pulpwood.

Land management practices prior to acquisition of the land for National Forest purposes, had placed much of the area in poor timber producing conditions. Under management the area has reverted to well-stocked stands of valuable timber. The aim of timber management is the continual production of high quality hardwoods.

i. Fish and Wildlife - The game population in the area is varied both in species and number. The small game population is made up of squirrel, raccoon, grouse, fox, and rabbit. White-tailed deer are common throughout the area and black bear are fairly common. Habitat conditions are generally satisfactory. However, over-browsing by deer is prevalent in the northern part of the area due to stand composition. Under the system of even-aged timber management this problem can be alleviated.

The trout fishery is one of the primary resources in the area. A tabulation of trout streams on the west side of the French Broad watershed shows over 280 miles of trout habitat waters.

Under years of watershed protection and management water quality has improved. The streams have stabilized and only a small amount of sediment is introduced from farming activities and run-off from native surface roads. This improvement of stream quality has reached stages of recovery where from 30 to 67% of trout populations are from natural reproduction.

Stream improvement measures by the Forest Service and the N.C. Wildlife Resources Commission are up-grading the trout habitat. Measures to create pools in shallow reaches of stream and the construction of barriers to impede the upstream movement of trash fish are the ones most commonly used. A tabulation of trout waters in the drainage area is appended to this report.

III. ESTIMATED FUTURE OF NATIONAL FOREST LANDS IN THE PROJECT AREA

a. Recreation Use - All forms of recreation use will show a substantial increase inthe future. The completion of the Blue Ridge Parkway and the Interstate highways in the area will be big factors in funneling more visitors into the area. Development of available recreation lands is progressing at a rate to satisfy most of the current demands. However, there is a lack of potential recreation sites to meet the predicted future needs. (Refer to Table IV in the Appendix for Recreation Use Projections). The development of the Cradle of Forestry in America will directly affect the attainment of the recreation potentials in this PL-566 project area; an area recognized as having the greatest development potential for conservation in the United States.

b. Water - General hydrologic conditions of the National Forest land in the watershed will continue to improve under current management practices. Stream conditions will improve through multiple-use coordination measures during logging, road building, and other land treatment designed to stabilize streamflow.

c. Timber - Access for timber harvest will be improved through new road construction and upgrading of the present road system. The timber harvest will remain at nearly present levels although stand growth will increase. The commerical forest land will decrease as more lands are

required for roads, recreation, and other uses.

c. National Forest Improvements

Trail construction will increase to provide access to remote areas for increasing numbers of hikers and fishermen. Building construction will be increased by construction of Job Corps camps and the expansion of recreation facilities.

d. Fish and Wildlife

The demand for trout fishing, either for food or sport, is increasing in this area to satisfy a desire for a total outdoor recreation experience among a growing percentage of forest visitors.

The National Forest programs and plans, in cooperation with the State Wildlife Resources Commission and the Bureau of Sports Fisheries and Wildlife, have the objective of supplying these growing demands. They consider such essential items as improved hydrologic condition of the watersheds, channel improvements, revitalized spawning gravels, channel stabilization, and access.

Specific measures for improvement of natural trout stream habitat will provide for:

1. Aquatic food production.
2. High and low shade and cover.
3. Spawning conditions.
4. Free and yearlong migration both up and down for all trout sizes.
5. Habitat free from erosion and sediment.

The protection and development of this high quality water within these public lands offer the best opportunities for economically providing the maximum trout fishery management through natural trout stream habitat.

Planned activities likewise emphasize natural conditions for mountain game, both large and small. Increased hunter demand trends of the past will accelerate in the future.

IV. PROJECT EFFECTS ON CURRENT ACTIVITIES AND RESOURCE VOLUMES & VALUES

An appraisal of the 10 sites affecting National Forest resources and current activities follows:

West Fork French Broad Structure ~~No. 3*~~

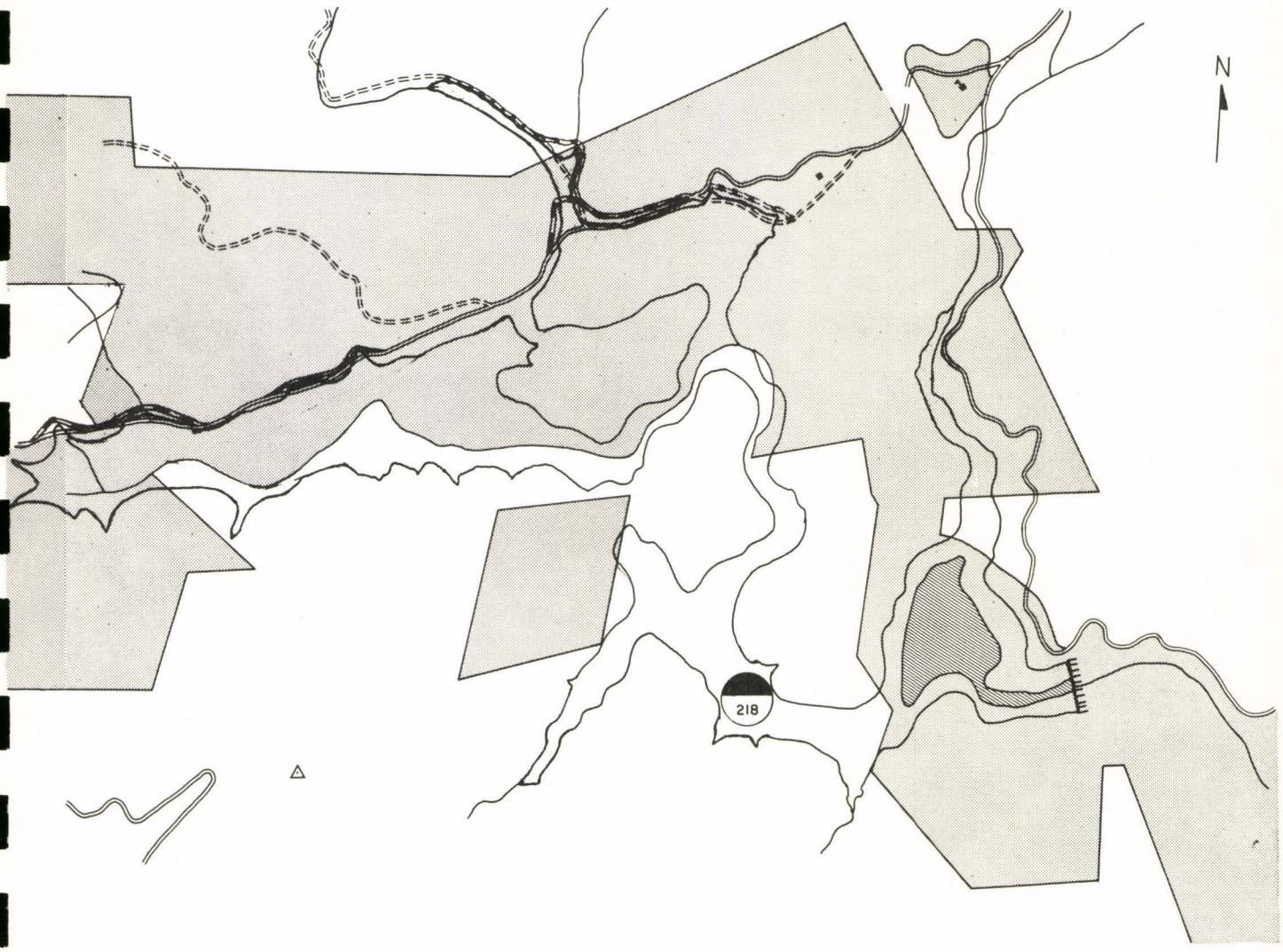
This ~~94~~ 92-foot structure is located on private land closely adjacent to the National Forest midway between the valley bottom and the top of the Tennessee Ridge. The maximum probable flood area is 330 acres. The total drainage area above the structure is 9,709 acres, of which 3,236 acres are private and the other 6,473 acres are National Forest land. The entire drainage area is inside the National Forest boundary.

Recreation

There is planned a 39 unit campground development on the site that will be eliminated in the flood pool area. The Forest Service Recreation Plan number is 218, capable of accommodating 19,500 visits annually with an economic value of $124,800 per year.

Wildlife

This is presently one of the finest brown trout streams on the French Broad River watershed. Few people now live in the immediate area. Channel stability and habitat for brown trout spawning and bottom organisms are very good. Aquatic organisms are very abundant. Light silting ~~originating~~ is caused from surface roads and small area cultivation ~~is the cause.~~ There is a total of 30.9 miles in fish habitat in this drainage with 11.6 miles through private land, and the remaining 19.3 miles on National Forest land. A total mileage above the dam is 21.5 with 7.0 on private land, and the remaining 14.5 on National Forest land.



LEGEND

ROADS

PROPOSED RELOCATION

EXISTING

PRIVATE LANDS

7 RECREATION SITES - PROPOSED

PROPOSED FRENCH BROAD P.L. 566 PROJECT
NORTH CAROLINA

RESERVOIR AT STRUCTURE SITE NO. 3

ON WEST FORK FRENCH BROAD

French Broad P.L. 566 Project
North Carolina
Proposed Dam & Reservoir at Site No. 3
on West Fork French Broad

Roads

State-owned roads with Forest system No. 243 and 244, the total of 2.5 relocation miles, will need to be replaced at an estimated cost of ~~$67,000~~ $230,000. based on SN 16 standard with rock surfacing. Same standard as the existing road.

Summary and Conclusions

This structure has a significant impact on Multiple-Use and resource plans for the National Forest land in the drainage. It eliminates the development of strategically located campground areas in a favorable location accessible from either the Parkway on top or U.S. 64 on the bottom. It damages current conditions of the rapidly improving trout habitat stream and seriously prohibits its development to the full potential. The projected need in this country before the year 2000 will over-saturate its resource capacity even under full development.

* ~~This structure will be constructed as~~ Construction of a dry dam to preserve the trout ~~fishery.~~ habitat is agreed upon. Suitable specifications in the design, Plunge pool operation and soil stabilization to Prevent intolerable sediment loads in the stream channel will Provide for trout migration and aquatic food below the dam.

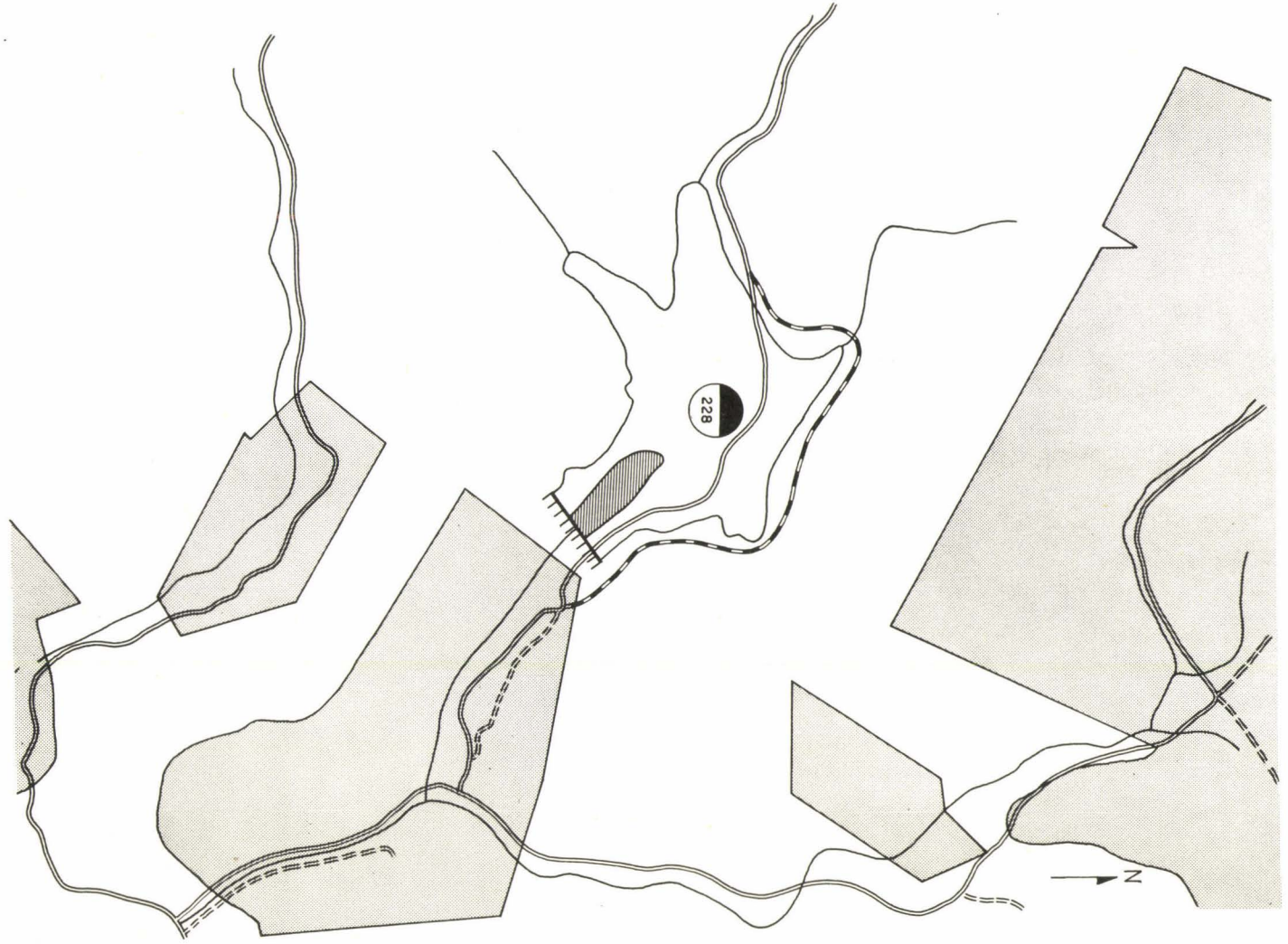
Tucker Creek Structural Site No. 7*

A 62 foot high dam all on National Forest land will totally occupy all the area suitable for any other type of development. The location is high up near the Parkway and on the most accessible route in the south half of the Pisgah Ranger District to the Parkway. Photograph marked No. 7 shows this relationship.

Tucker Creek drainage has 4,038 acres, of which 1,136 acres are private and 2,922 acres are National Forest.

Recreation

This small, bowl-type valley is planned for 204 campground units as Site No. 228. It is ideally situated for this purpose considering proximity



LEGEND

ROADS
PROPOSED RELOCATION
EXISTING
PRIVATE LANDS
7
RECREATION SITES - PROPOSED

PROPOSED FRENCH BROAD P.L. 566 PROJECT
NORTH CAROLINA
RESERVOIR AT STRUCTURE SITE NO. 7
ON TUCKER CREEK

French Broad P.L. 566 Project
North Carolina
Proposed Dam & Reservoir at Site No. 7
on Tucker Creek

to the Parkway, adjacnet excellent trout stream and aesthetically pleasing forestred mountains surrounding it.

The saturated use of these 204 units per season at $6.40 per visit amounts to $652,800 per year.

Wildlife

Tucker Creek has a stable channel. Some fine sand and light organic-type material drift in the stream. This sediment originates from native surface roads and pasture land agriculture from above. Although the stream bed is only partially (30 percent) restored to pristine condition suitable for 90 percent habitat for aquatic fish food, it is an excellent trout stream now. Both brown and rainbow trout are outstanding. Mayflies are very abundant in the bottom. Fishing pressure currently is light. There is a total of 11.3 miles of trout habitat stream above this structure with 4.5 miles on private land and 6.8 miles through National Forest land. It is an important part of the North Fork drainage having a total of 73.2 miles of trout stream habitat.

Roads

State-maintained road (FS system No. 246-1) would need to be relocated for a distance of 1.4 miles to clear the dam and flood pool. The estimated cost is $126,000.00.

Watershed

The Tucker Creek watershed is well forested and the main and tributary stream channels are stable. The hydrological condition rates good and better after 30 years of protection and management primarily for water purposes. All factors conducive to improved watersheds are culminating to produce accelerated recovery in the near future. Cultural practices on the private land have changed from cultivated crops to pasture and homes.

From Geological Survey, weather bureau, and other records available for the 1940, 1949, and 1961 French Broad floods, it is significant that this stream contributed little, if any, damage from the flood.

Summary

This structure occupies a special key site on an excellent trout stream. Few locations in the Southern Appalachian Mountains possess more developmental potential for multiple-use services to an obviously growing public need. A special study and appraisal should be required before any decision is made to construct the dam.

*This structure has been eliminated from the project plan of work.

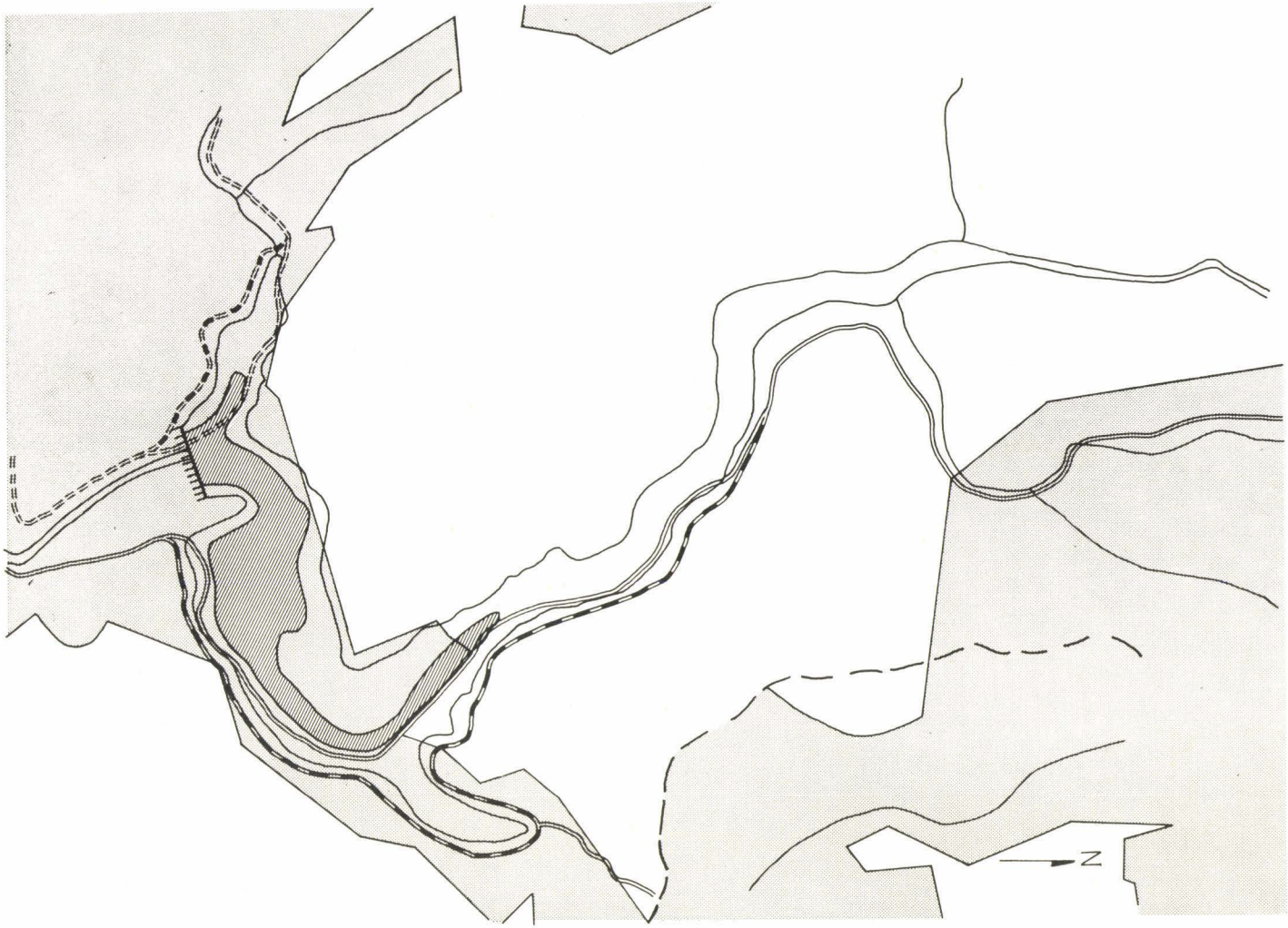
North Fork French Broad Structure No. 9*

The dam height is 206 with maximum flood pool of 400 acres and a normal maximum of 280. A minimum pool of 75 acres is planned. feet. This drainage contains a total of 17,680** acres. Of this, 2,225 acres are private and 14,689 acres are National Forest land. The private land is concentrated mostly in the mid-headwaters of the drainage. The dam is located below the mouth of Diamond Creek and approximately 0.2 mile above its confluence with the West Fork of the French Broad. The site of the structure occupies one of the most pleasing aesthetic scenes in the canyon. This high earth-filled structure, the relocation of the road, the long open-faced spillway, borrow pits, and other scars will have a lasting detrimental effect.

There are no planned recreational development sites in the area of this structure and pool.

Wildlife

The North Fork stream channel is stable with light drifting sand during the period of high water flows. Caddis fly larvae and other aquatic fish food species are abundant in the bottom of the channel. It is presently occupied by some undesirable species in moderate numbers.



LEGEND

ROADS

PROPOSED RELOCATION

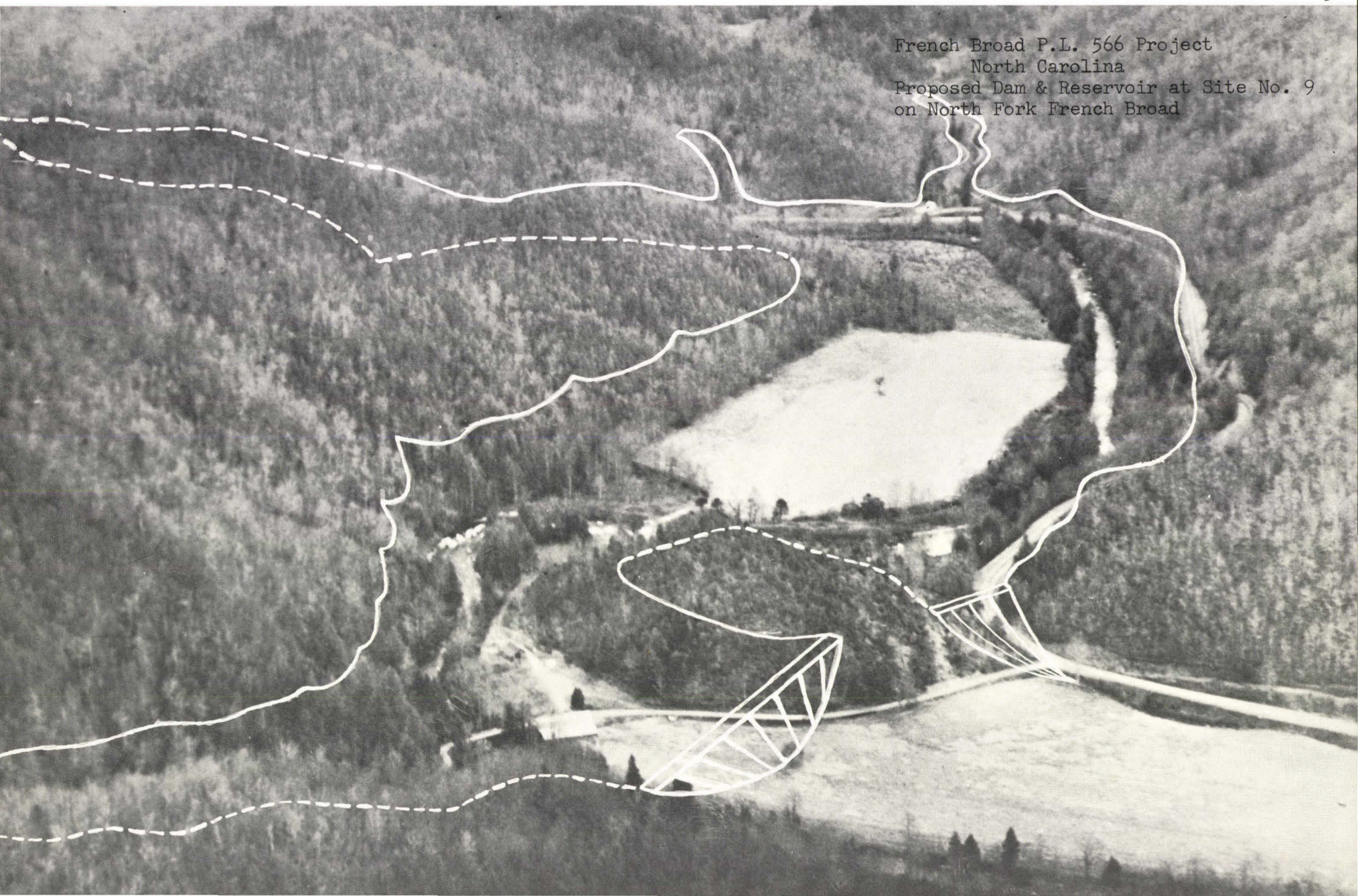
EXISTING

PRIVATE LANDS

PROPOSED FRENCH BROAD P.L. 566 PROJECT
NORTH CAROLINA

RESERVOIR AT STRUCTURE SITE NO. 9

ON NORTH FORK FRENCH BROAD


French Broad P.L. 566 Project
North Carolina
Proposed Dam & Reservoir at Site No. 9
on North Fork French Broad

This stream is generally a good quality trout stream and currently has moderate fishing pressure in the main stem. The North Fork has a total of 57.1 trout stream habitat miles. Below the dam there are ~~.9~~ 1.2 miles all on private land. Above the dam there are ~~56.2~~ 56.9 miles, of which 14.7 miles are on private land and 41.5 miles are on National Forest land.

* Excludes drainage areas above structures 7 and 35.

**Includes all tributaries except Tucker Creek above structure 7 and Shoal Creek above structure 35.

Roads

Paved Forest Highway 32 will be disrupted by the dam and floodpool. It will require 1.8 miles of replacement at an estimated cost of $315,000. to replace in kind. Present access to National Forest lands in Diamond Creek will be cut off by this structure. It can be expected that this road will be replaced, either by crossing the top of the dam or constructing a road and bridge below the dam.

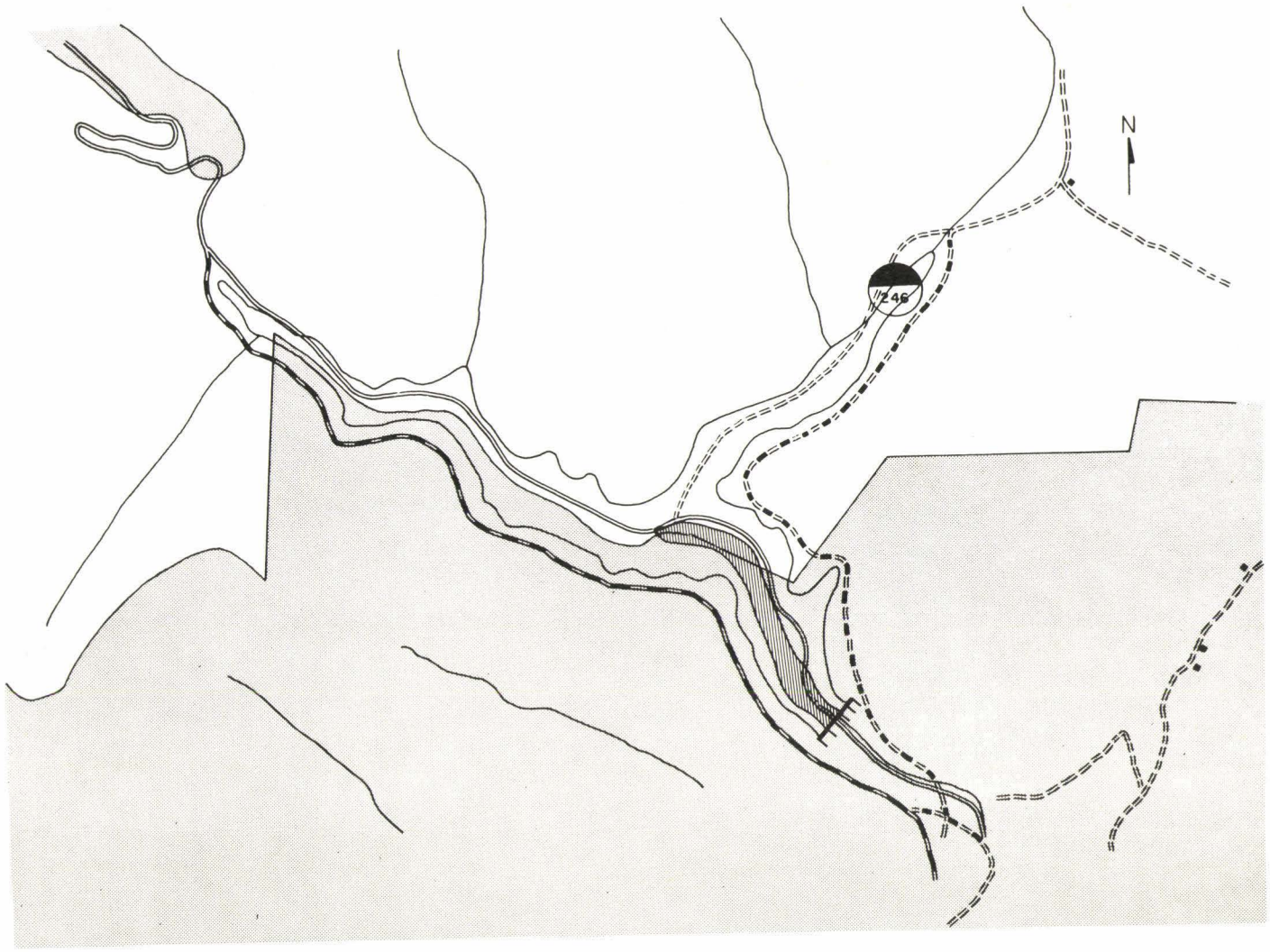
Summary Conclusion

This structure will seriously inhibit future development of the various resources and uses in this drainage. The structure will be very unsightly. The road will be double in length and of low speed.

*To alleviate impacts on the resources at this site the structure will be a dry dam. Structure design should provide for the needs of the trout fishery as will be jointly determined by affected agencies

Catheys Creek Structural Site No. 24*

The dam is located approximately 1/2 mile inside the National Forest boundary near the mouth of the canyon. The total drainage area is 7,392 acres inside the Forest boundary: 1,528 acres private; 5,864 acres National Forest. A 127 feet high earth-filled structure is planned below the mouth of Kuykendall Creek. It will seriously affect the aesthetic qualities of this canyon.



LEGEND

ROADS

PROPOSED RELOCATION

EXISTING

PRIVATE LANDS

7 RECREATION SITES – PROPOSED

PROPOSED FRENCH BROAD P.L. 566 PROJECT
NORTH CAROLINA

RESERVOIR AT STRUCTURE SITE NO. 24
ON CATHEYS CREEK

French Broad P.L. 566 Project
North Carolina
Proposed Dam & Reservoir at Site No. 24
on Catheys Creek

Recreation

Kuykendall Creek, site #346, was inventoried as a 30 acre development site for camping and picknicking. Five acres of this potential site would fall within the 2328 ft. flood pool. These 5 acres have a potential of 15 family units accommodating an estimated 12,000 visits annually.

In its undeveloped state this area could be available for overflow camping. The remaining 25 acres, above maximum flood pool, have a potential of 75 family units which could accommodate 60,000 visits annually. The present access to this potential site would be eliminated by construction of the flood control structure.

The Pisgah-Nantahala Recreation Management Plan placed this site in unallocated reserve due to its final rating given during the field inventory. The development priority of this site would not justify constructing a double lane access road from U.S. 64 at this time. However, any relocation of the Cathey Creek Road from U.S. 64 to this site should be located so it can be widened for 2 lane traffic when needed.

It will eliminate approximately 5 acres of potential recreation site on Kuykendall Creek and complicate recreation access into the area.

Wildlife

Catheys Creek is a fine example of native trout water and it supports excellent fishing. There are 2 miles of main channel below the dam, all on private land. There is a total, including all tributaries suitable for trout habitat, of 22.9 miles above the dam: 2.9 miles private; 20 miles National Forest. Brook trout were found when the State sampled this stream at the structure site.

Roads

Relocation of Road 471-1, 471-2, for 2328 ' pool 3.2 miles.

This relocation includes 0.7 mile of Road 471-1 maintained by the N.C. State Highway Commission. In the original impact report, this relocation was shown as 4.0 miles at a cost of $260,000.00. This relocation has been checked out now as 3.2 miles at a cost of $102,400. for replacing the existing road to the same standard, SL12 with 6" crushed rock surface. Apparently, the $260,000. estimate was based on building the road to the planned standard, DN24.

The ForestService share of this relocation is 2.5 miles for $80,000.00. The State's share is 0.7 mile = $22,400.00.

Relocation of Road 471-1, 471-2 for 2290' pool. 2.4 miles.

This relocation is an alternate for proposed relocation if the sponsoring agency considers it feasible to lower the pool elevation to 2290'. This would result in a shorter road relocation and save the 5.0 acre proposed recreation portion of Site 346.

The location follows that of the relocation for the 2328' pool to a point in a gap northeast of the dam site. From the gap, the location is below the 2328' pool relocation, crossing Kuykendall Creek near the existing pond site and connecting back into the existing Road 471-2 about 700' above the end of the relocation for 2328' relocation.

The 2.4 miles is estimated at $70,400.00, 1.7 miles of which is Forest Service at a cost of $48,000. and 0.7 mile is State at $22,400.00.

Summary and Conclusions

This structure is in serious conflict with National Forest and Multiple-Use resources plans, particularly the recreation and trout fishing resources. If constructed, this dam will: (1) make 25.7 miles of excellent waters unmanageable for trout; (2) destroy a 90-family-units site outstandingly suitable for recreaton development; (3) necessitate constructing 2.2 miles

of Forest development road to replace existing road under Forest Service jurisdiction; and, (4) depreciate an above-average aesthetic area which might qualify as a scenic area.

*This structure will be a dry dam to preserve the trout fishery and lessen impacts on the recreation resource. The low short range benefits downstream most properly should eliminate this structure.

Turkey Creek Structural Site No. 28*

Turkey Creek is the northernmost drainage in the National Forest area of this project. It is a tributary to the Davidson River, connecting with it below the highway and above the Olin-Mathison plant. The structure location is on the main channel midway between the mouth of Silver Creek and the main forks of Turkey Creek. Most of the main channel is in private ownership. The drainage inside the National Forest above the dam has a total acreage of 2,765; 920 acres private; 1,845 acres National Forest. This 81 foot high dam will not be visible from the valley roads.

There are no planned Forest Service recreational developments. It is not suitable for extensive private development.

It is now a good trout stream, providing spawning for all trout and yearlong habitat for the smaller size trout. Stream sampling by the State found rainbow trout at structure site. There is a total of 12.7 miles in the Turkey Creek drainage. Above the dam there are 2.5 miles on private land and 3.7 miles on National Forest land, a total of 6.2 miles. There are 6.5 miles in the main stem and 2 tributaries below the dam; 4.5 miles private and 2 miles National Forest.

Roads

Forest Service Road System No. 252-1 , maintained by the State, will need

to be relocated for a distance of 1 mile around the flood pool. Estimated cost $40,000.00.

Summary

If constructed as planned, this dam will: (1) make 12.7 miles of stream unmanageable for trout; and, (2) necessitate replacement of 1 mile of road which is under State jurisdiction but which is part of the National Forest transportation system.

*To be constructed as a dry dam.

Shoal Creek Structure No. 35*

This is the uppermost structure site of 3 on the North Fork of the French Broad River. The others are sites 7 and 9. Shoal Creek drainage contains 1,971 total acres, 498 acres of private land, and the remaining 1,473 acres of National Forest. The structure and pool are all located on private land.

Recreation

There are no planned Forest Service developments in this area affected by the Shoal Creek structure. The 54 foot dam, in rather rolling country, will be visible from the local area and rather indistinctly from the Blue Ridge Parkway.

Wildlife

Shoal Creek is a high quality trout stream that has excellent rainbow reproduction habitat. Aquatic organisms are very abundant. Temperatures are ideal, especially for warm weather occupancy for the large spawning sizes. The stream now receives little fishing pressure. The miles of stream habitat below the structure are included in Dam No. 9 miles. Four and eight tenths miles lie above the structure with 2.0 miles on private land and the remaining 2.8 miles on National Forest land. The miles of trout stream above the structure will be rendered unmanageable for such purposes. The channel below the structure will, for many years,

be suitable for trout spawning purposes or yearlong livelihood.

Roads

Forest Service road system No. 247 will need to be relocated for a distance of 0.8 mile. The estimated cost is $72,000.00.

Summary and Conclusions

The cost of this structure, including its operation and maintenance, versus the impact on survival and current reproduction of trout, and the curtailment this places on future development of this trout stream to maximum potential, poses a serious question of its on-site feasibility.

*This structure has been eliminated from the project proposal.

Flat Creek Structural Sites No. 1 and No. 20

The dam on the North Fork of Flat Creek designed at 38 feet in height fits snugly into the topography, creating an ideal reservoir. The pasture land cover and topography make this an ideal reservoir for homesite and commercially developed recreation purposes. It is located entirely on private land with no National Forest land near the drainage above. The South Fork of the Flat Creek Structure No. 20, designed at 56 feet, also does not involve National Forest land on or above the site. The effect concerns 12.6 miles of good quality rainbow trout stream. The entire Flat Creek drainage is within the National Forest boundary. National Forest recreational planned developments are not involved.

This stream is appraised by the North Carolina Game and Fish Commission Biologist as having trout habitat conditions excellent for rainbow reproduction.

There are no National Forest System roads in this area.

Summary Conclusions

The installation of structures as designed at 1 and 20 will very seriously damage the present condition of these streams for trout management. They will practically eliminate the development of the full potential for trout by reverting them to a condition of planting only.

Kings Mill Creek Structural Site No. 26

The structure is located 1/4 mile inside the National Forest boundary on private land. National Forest land will not be affected by either the structure or impounded water. The drainage has 1,856 total acres inside National Forest boundaries: 483 acres private; 1,373 acres National Forest. All National Forest acreage is in the headwaters. The water from this drainage serves municipal uses in Brevard. The dam is designed to be 78 feet high. It is in a steep-walled canyon and will not be visible from the valley or main traveled road.

Recreation

There are no planned National Forest recreation developments. Private development is also restricted by adverse topography.

Wildlife

This stream supports manageable trout species even though it flows through the town of Brevard. It contains a total of 9.1 miles of trout habitat water, 2.3 miles below the dam; all private. There are a total of 5.2 miles above the dam: 1.2 miles private; 4.0 miles National Forest. Rainbow trout were found by the State when the structure site was sampled.

Roads

Forest Service system road No. 487-1 will need to be relocated for a distance of 2 miles to bypass the dam and flood pool. The estimated cost of replacement is $90,000.00. The State owns and maintains this road.

Summary

If constructed, this dam will: (1) make 9.1 miles of stream unmanageable for trout; (2) necessitate replacement of 2 miles of road which is under State jurisdiction but which is a part of the National Forest Transportation System.

Largely because of the area being mostly in private ownership with only the steep headwaters in National Forest, there is no serious objection to the installation of the structure except for the trout habitat which, admittedly, is minor in comparison with the total area.

Lambs Creek Structural Site No. 27

Lambs Creek lies entirely within the Forest boundary and is a tributary to Allison Creek which is partly outside. Only 480 acres of the 960 acres are National Forest land, all in the headwaters. The structure and pool are entirely on private land. The 49 foot dam will be seen up the canyon from short stretches on both U.S. 64 and State 280.

No Forest Service recreational development is planned. The basin above the dam provides excellent opportunity for private development, either summer homes or commercial development for swimming and warm water fishing. There is a total of 7.4 miles of trout habitat. Two miles are on National Forest land.

Brook trout were found when the State sampled the stream at the structure site.

Roads

State road with Forest Service No. 253-1 will need to be relocated for 1.1 miles around the flood pool. Estimated cost $35,000.00. This is all on private land.

Summary

If constructed, this dam will: (1) make unmanageable 2 miles of brook trout stream; (2) necessitate replacement of 1.1 miles of road which is under State jurisdiction, but which is on the National Forest Transportation System.

Summary of Conclusions

The planned system of flood control structures superimposed on high quality mountain streams in an unusually attractive forest setting will--

--detract measurably from the over-all aesthetic qualities of the most heavily visited Ranger District in Eastern United States.

--inundate feasible sites for expanding public recreation facilities.

--destroy, or seriously damage, trout habitat in mountain streams representing nearly 5 percent of the total mileage of such waters in North Carolina.

--activate or reactivate erosion in stream channels already in satisfactory condition or improving.

--Complicate the development and maintenance of an adequate transportation system for progressive tourist travel, for orderly dispersal of recreationists, including hunters and fishermen, and for efficient movement of timber and other products.

V. RECOMMENDATIONS

1. That no structure be built at sites 7, 9*, 24*, and 35.
2. Dry structures only at sites 3 and 28 with the following protective provisions:
   a. That clearing only absolutely necessary within the flood pool site area.
   b. No excavation of channel or unnecessary disturbances in the flood pool area. All borrow areas, both above and below the dam, will be so located and used that at no time will they deposit sediment into the stream.
   c. Tubes will be placed on a gradient and sufficient baffles installed to assure the passage of all size trout migrating upstream during normal or low flows.
   d. Plunge pools will be constructed in such a manner as to hold a water level adequate for all trout to enter the tube during normal or low water stages and designed to prevent channel activation.
3. Formal assurance that all National Forest system roads providing unobstructed equivalent access will be constructed around sites 3, 7, 9, 24, 26, 27, 28, and 35.
4. All trout stream improvements and channel stabilization items specified in the Plan of Work will be done by the Forest Service on National Forest lands.
5. Stilling basins or similar measures will be constructed so as to prevent activation of the stream channel below structures 1 and 20.

*Negotiations between the Soil Conservation Service, Forest Service, and Fish and Wildlife Service at meetings on January 7, 1964, September 10, 1964, and December 14-16, 1964, resulted in Plan of Work modifications, dropping Tucker Creek 7 and Shoal Creek 35 structures and building dry dams at North

Fork 9 and Catheys Creek 24. This agreement was reached for the purpose of establishing a Departmental position from which an agent of the Soil Conservation Service could formally negotiate with an agent from the Tennessee Valley Authority to resolve conflicts in flood control treatment of the Upper French Broad River drainage.

A P P E N D I X

LOCATION MAP

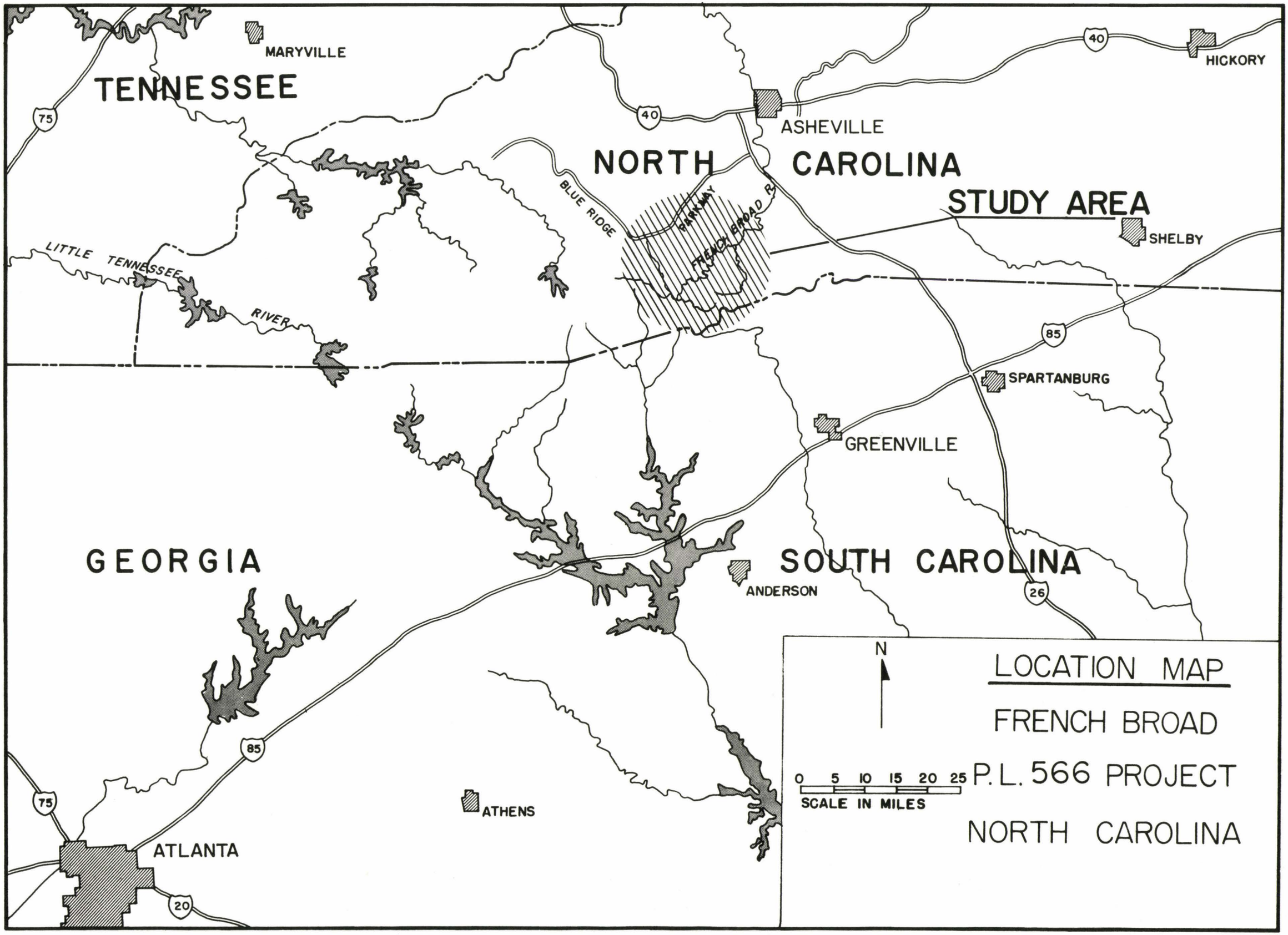
VICINITY MAP

TABLE I - Estimated Cost of Replacing Roads.

TABLE II- Site Identification.

TABLE III-Tabulation of Trout Streams - West Side of French Broad River Watershed.

TABLE IV- Recreation Use - Current and Projected Pisgah Ranger District


MARYVILLE
TENNESSEE
75
40
HICKORY
ASHEVILLE
NORTH CAROLINA
STUDY AREA
BLUE RIDGE
PARKWAY
FRENCH BROAD R.
SHELBY
LITTLE TENNESSEE
RIVER
85
SPARTANBURG
GREENVILLE
GEORGIA
SOUTH CAROLINA
ANDERSON
26
ATHENS
ATLANTA
20
N
0 5 10 15 20 25
SCALE IN MILES
LOCATION MAP
FRENCH BROAD
P.L. 566 PROJECT
NORTH CAROLINA

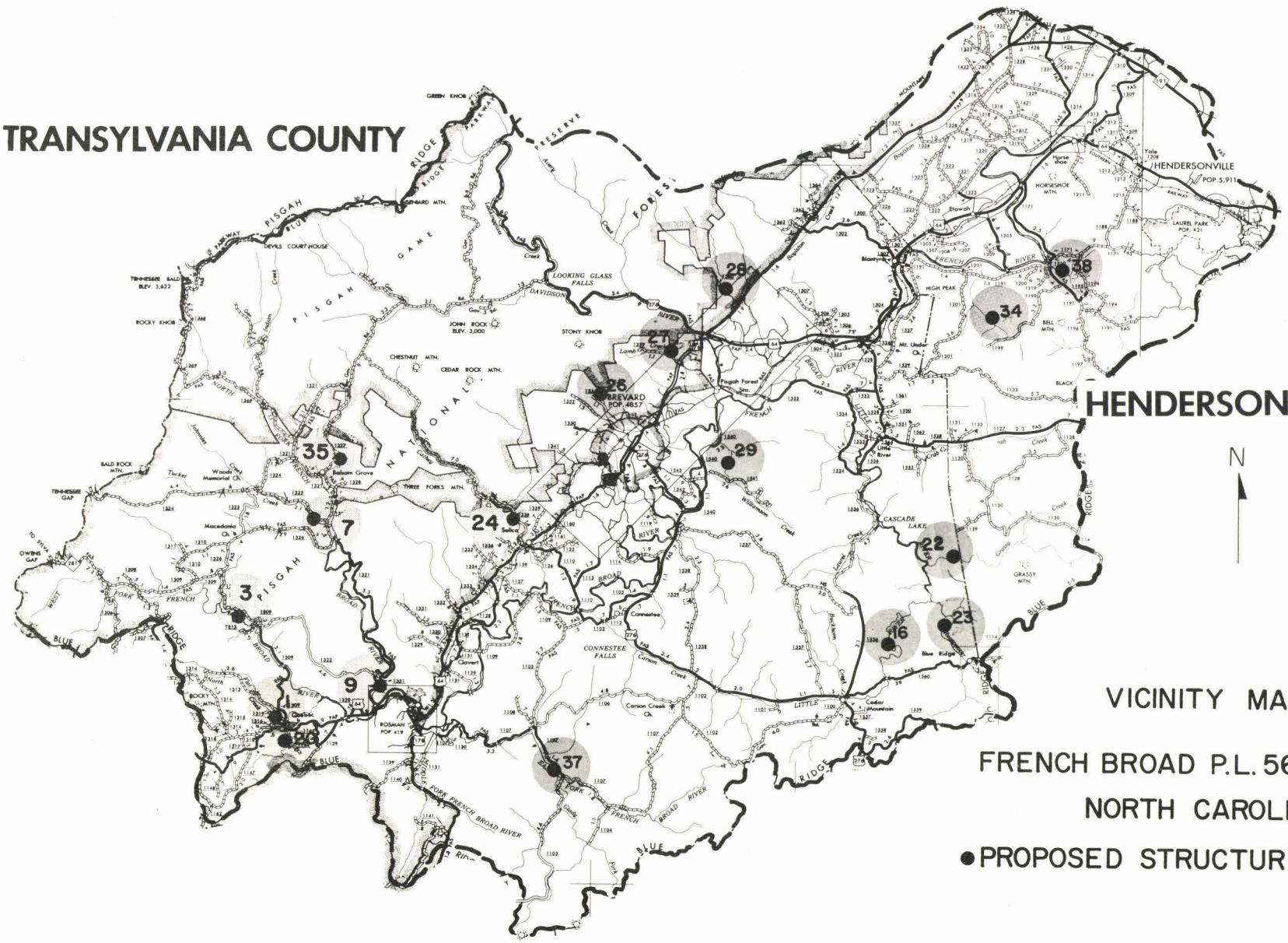

TRANSYLVANIA COUNTY
HENDERSON COUNTY
N
VICINITY MAP
FRENCH BROAD P.L. 566 PROJECT
NORTH CAROLINA
● PROPOSED STRUCTURE LOCATIONS

TABLE I

Estimated Cost of Replacing Existing Roads to Planned Standard

Site No.	Drainage	FS Road No.	Jurisdiction	Miles of Relocation	Cost of Relocation
3	West Fork	243	State	2.0	$ 200,000.
3	West Fork	244	State	0.5	30,000.
7	Tucker Creek	246-1	State	1.4	126,000.
9	North Fork	FH-32	State	1.8	315,000.
24	Catheys Creek	471-2	FS	4.0	260,000.
26	Kings Creek	487-1	State	2.0	120,000.
27	Lambs Creek	253-1	State	1.1	50,000.
28	Turkey Creek	252-1	State	1.0	50,000.
35	Shoal Creek	247	State	0.8	72,000.
					$1,223,000*

* Structures 7 and 35 have been eliminated from the project proposal. The estimated relocation costs are reduced by $198,000. making an adjusted total of $1,025,000.00.

TABLE II

Site Identification Table*

Site No.	Stream	Dam Ht.	Crest Elev.	Sed. Pool Elev.	Sed. Pool Area	Flood Pool Area	Drainage Area Acres	NF Land in Drainage
28	Turkey	81	2231.0	2181.0	6.0	36.0	2765	1845
27	Lambs	49	2206.5	2187.0	4.5	20.5	960	480
26	Kings	78	2283.5	2237.0	4.0	23.5	1856	1373
24	Catheys**	127	2328.0	2248.0	10.0	75.5	7392	5864
9	N. Fork	113	2296.0	2240.0	58.0	122.0	17,914 1/	14,689
35	Shoal	54	2860.0	2835.5	12.0	48.0	1971	1473
7	Tucker	62	2697.0	2667.0	24.0	82.0	4058	2922
3	W. Fork	94	2665.0	2618.0	24.0	212.0	9709	6473
1	N. Flat	38	2569.5	2559.0	17.5	34.0	1318	130
20	S. Flat	56	2676.0	2657.0	21.0	55.0	2016	-

*See description of proposed project for alternate plan.

1/ Area given for structure 9 is exclusive of the portion of the watershed above #9 which lies above structures #7 and #35.

** Sites 7 and 35 eliminated from the project proposal.

TABLE III

Tabulation of Trout Streams On West Side of French Broad River Watershed

Structure or Stream	Miles								
	Above Structures		Below Structure Main Stem		Trib.		Total	Total	Total
	NF	PVT.	NF	Pvt.	NF	PvT.	NF	Pvt.	NF & Pvt.
28	3.7	2.5	0	1.5	2.0	3.0	5.7	7.0	12.7
27	1.5	2.1	0	1.8	0	2.0	1.5	5.9	7.4
26	4.0	1.2	0	2.3	0	1.6	4.0	5.1	9.1
24	20.0	2.9	0	2.0	0	.8	20.0	5.7	25.7
9	41.5	14.7	0	.9	0	0	41.5	15.6	57.1
*35	2.8	2.0	*	*	*	*	2.8	2.0	4.8
*7	6.8	4.5	*	*	*	*	6.8	4.5	11.3
3	14.5	7.0	2.5	2.3	2.3	2.3	19.3	11.6	30.9
1	0.5	3.3	.8	1.0	0	1.5	1.3	5.8	7.1
20	0	4.0	0	1.5	0	0	0	5.5	5.5
Sub-Total	95.3	44.2	3.3	13.3	4.3	11.2	102.9	68.7	171.6
Main French Broad	-	-	-	-	-	-	0	24.6	24.6
Davidson River	-	-	-	-	-	-	74.5	2.3	76.8
Cherryfield Creek	-	-	-	-	-	-	5.8	3.3	9.1
Grand Total	95.3	44.2	3.3	13.3	4.3	11.2	183.2	98.9	282.1

*All streams below these structures downstream to Structure 9 are included in tabulation of miles above 9. These structures eliminated from the project proposal.

TABLE IV

Recreation Use Current and Projected
Pisgah Ranger District

C.Y.	Mandays
1964	823,000
1976	5,600,000
2000	10,900,000

Pisgah RD No. 1 in R8
NFs in N.C. No. 1 in USA *

* 1961 Visitor Days